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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/669,205	09/24/2003	Sarah E. Kim	ITL.1040US (P14807)	2630
21906	7590	12/28/2007		
TROP PRUNER & HU, PC 1616 S. VOSS ROAD, SUITE 750 HOUSTON, TX 77057-2631			EXAMINER ISAAC, STANETTA D	
			ART UNIT 2812	PAPER NUMBER
			MAIL DATE 12/28/2007	DELIVERY MODE PAPER

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/669,205
Filing Date: September 24, 2003
Appellant(s): KIM ET AL.

Timothy N. Trop
For Appellant

MAILED
DEC 28 2007
GROUP 2800

EXAMINER'S ANSWER

This is in response to the appeal brief filed 9/4/07 appealing from the Office action mailed 11/17/07.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,864,571

ARIK ET AL

3-2005

Kotz, John C and Purcell, Keith F.. "Chemistry & Chemical Reactivity", Saunders College Publishing, Second Edition, 1991, page index I-6

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 14 is sustained under 35 U.S.C. 102(e) as being anticipated by Arik et al., US Patent 6,864,571.

Arik discloses the semiconductor method as claimed. See figures 1-8, and corresponding text, where Arik teaches, pertaining to claim 14, a method comprising: forming a trench **122** in an integrated circuit substrate **100** (figure 5; col. 8, lines 35-43); lining the trench with a catalyst material **124** to remove gases from a circulating fluid (figure 5; col. 7, lines 46-67; col. 8, lines 1-5, circulating fluid and catalyst involvement with later formed channels; col. 8, lines 45-51, lining of the groove); forming channels **126** that align with said trench to allow fluid circulation completely across said substrate from one side of said substrate to the other and through said trench (figure 5; col. 8, lines 52-59; col. 9, lines 20-33, **Note:** the Examiner takes the position that grooves are formed on both the top and bottom of the combined substrates **102** and **104**. In addition, the Examiner takes the position that the channels are formed laterally across the

substrates); and protecting said catalyst when forming said channels (figure 5; col. 8, lines 45-51, the resist provides protection of the catalyst deposition).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 16 and 17 are sustained under 35 U.S.C. 103(a) as being unpatentable over Arik et al., US Patent 6,864,571.

Arik discloses the semiconductor method substantially as claimed. See preceding rejection of claim 14 under 35 U.S.C. 102(e).

However, Arik fails to show, pertaining to claims 16 and 17, depositing platinum or lead as catalyst within the trench.

Arik teaches that a catalyst coating is deposited within the groove.

It would have been obvious to one of ordinary skill in the art to incorporate, depositing platinum or lead as a catalyst within the trench, in the method of Arik, pertaining to claims 16 and 17, according to the teachings of Arik, with the motivation that, both platinum and lead chemically can be used as catalyst materials conventionally known in the art.

(10) Response to Argument

In response to Appellant's arguments as to whether Arik suggests that the catalyst material removes gases from the circulating fluid, the Examiner takes the position that Arik does suggest

that the catalyst material removes gases from the circulating fluid. Specifically, Arik shows, in figure 5, a cross-section of one of the microchannels where the fluid vapor 130 (dark shaded area) is condensed 132 (dark droplets) by the catalyst coating (the implied removal of gases from a vapor to liquid form) (col. 7, lines 46-67; col. 8, lines 1-5). In addition, the Examiner takes the position that although Arik teaches that the catalyst causes carbon nanotubes to grow, the general definition of a *catalyst* has a known chemical property to increase the rate of a reaction while being consumed in the reaction (see *Kotz, John C and Purcell, Keith F.. "Chemistry & Chemical Reactivity", Saunders College Publishing, Second Edition, 1991, page index I-6*). Therefore, the catalyst formed within the micro-channel, as taught by Arik, is chemically *reacting* with the liquid to remove gases from a liquid while circulating through the micro-channel.

In response to Appellant's arguments whether Arik teaches channels that align with the trench to allow fluid circulation completely across the substrate from one side of the substrate to the other and through the trench, the Examiner takes the position that Arik does suggest that the grooves can be formed on both the top and bottom of the combined substrates 102 and 104 (figure 5; col. 8, lines 52-59; col. 9, lines 20-33). In addition, Arik implies that the grooves would have been formed across either wafer from side to side, since the fluid flows through the channels formed within the grooves.

In response to the Appellant's arguments whether Arik teaches protecting the catalyst when forming the channels, the Examiner takes the position that Arik states that the photo resist provides protection of the catalyst film while the channels are being formed, where portions of the catalyst covered by the patterned photo-resist will be protected (figure 5; col. 8, lines 45-51).

Application/Control Number:
10/669,205
Art Unit: 2812

Page 6

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,


Stanetta Isaac

Patent Examiner

Art Unit 2812

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CHEMISTRY & CHEMICAL REACTIVITY

Second Edition

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Saunders College Publishing
Harcourt Brace Jovanovich College Publishers
Ft. Worth Philadelphia San Diego
New York Orlando Austin San Antonio
Toronto Montreal London Sydney Tokyo

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Text Typeface: Times Roman
Compositor: General Graphics Services, Inc.
Acquisitions Editor: John Vondeling
Developmental Editors: Becca Gruliow and Sandi Kiselica
Managing Editor and Project Editor: Carol Field
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Printed in the United States of America

CHEMISTRY & CHEMICAL REACTIVITY 2/e

0-03-047562-7

Library of Congress Catalog Card Number: 90-050857

23 032 987654

- chemical and physical properties of, 953t
 combustion of, free energy change for, 834
 cycle in biosphere, 262, 806
 diamond form of, 440, 442, 542–543, 954
 electron configuration of, 330, 362, 415
 graphite form of, 536, 954
 molecular, molecular orbital configuration of, 437
 oxides of, 957
 radioactive isotopes of, 261–263
 radiolabeling with, 661
 Carbon black, 955
 Carbon cycle, environmental, 262
 Carbon dioxide
 atmospheric, 806
 on Venus, 741
 in beer, 571
 in biosphere, 806–808
 bond order in, 376
 equilibria involving, 806–808
 formal charges in, 388
 in Grignard reagent chemistry, 1110–1111
 in illustration of Henry's law, 568
 geometry and structural representations of, 391
 as Lewis acid, 738
 phase diagram for, 549
 polarity in, 400
 reaction with carbon, 691
 reaction with hydrogen, 691
 reaction with limestone, 660–661
 solid, 206, 207, 535, 958
 sublimation of, 549
 supercritical, 524
 Carbon monoxide, 749, 957, 973
 bonding in, 426–427
 chemistry of, 958
 Carbon steel, 1033
 Carbon tetrachloride, 965
 as solvent, 564, 565
 Carbonate(s)
 alkali metal, 921, 923
 alkaline earth metals, 813
 as Brønsted base, 702, 705
 geometry and structural representations of, 391
 ion, 75t
 polyprotic nature, 759
 metal, reactions of, 151, 160
 reactions
 with acids, 150
 in biosphere, 262
 resonance structures of, 375
 bond length in, 377
 salts, solubility of, 802
 Carbonic acid, 720, 806
 as polyprotic acid, 732
 stepwise dissociation of, 757, 807
 Carborundum, 967
 Carbonyl bromide, 692, 693
 Carbonyl group The functional group characterizing aldehydes and ketones, 1082, 1108
 Carbonyls, metal, 100
 Carboxyl group The functional group characterizing organic acids, 1082
 in amino acids, 1124
 Carboxylic acid(s) Any of a class of organic compounds characterized by the presence of a carboxyl group, 1082
 chemistry of, 1103–1104
 formation, by aldehyde oxidation, 1109
 by primary alcohol oxidation, 1086
 naming of, 1101–1102
 properties of, 1103
 Carothers, Wallace H., 1145
 Cassiterite, 100, 168, 956, 972
 Cast iron, 1032
 Catalysis, 641–647
 and reaction rates, 608
 types of, 642
 Catalyst(s) A reagent that can increase the rate of a reaction while not being consumed in the reaction, 608
 in contact process, 1008
 effect on equilibrium, 684–686
 in Haber process, 981
 in hydrogenation of alkenes, 1091
 in Ostwald process, 987
 in rate expression, 612
 Ziegler–Natta, 1142
 Catalytic converter, automotive, 645, 645
 Catalytic cracking A petroleum refining process in which large alkanes are broken down by a catalyst into smaller, branched-chain alkanes more suitable for use in gasoline, 1115
 Catalytic reforming A petroleum refining process in which alkanes are converted to aromatic compounds for use in gasoline and in the manufacture of organic chemicals, 1116
 Catenation The ability of an element to form long chains or rings by means of bonds between its atoms
 carbon, 967
 nitrogen, 982
 phosphorus oxyacids, 991
 silicon, 967
 sulfur, 1000
 Cathode The electrode of an electrochemical cell at which reduction occurs, 855
 Cathodic protection, 891
 Cation(s) An ion with a positive electrical charge, 72
 as Lewis acids, 735–738
 radius of, 346
 water dipole interaction with, 505–506
 as weak acids, 720
 Cavendish, 907
 Cell diagram, 855
 Cell potential, E_{cell} A measure (in volts) of the tendency of reactants to proceed to products in an electrochemical cell, 857
 at standard conditions. *See* Standard potential
 Cell voltage. *See* Cell potential
 Cellobiose, 1132
 Cellulose, a linear polymer of β -glucose units, 1132
 Cellulose acetate, 1145
 Celsius, Anders, 22
 Celsius temperature scale A scale defined by the freezing and boiling points of pure water, set at 0 °C and 100 °C, 20
 Cesium
 chemical and physical properties of, 916t
 reaction with water, 918
 Cesium chloride, simple cubic structure of, 532
 solubility curve for, 570
 Cesium iodide, crystal structure of, 556
 Chadwick, James, 264
 Chain reaction An explosively rapid sequence of reactions, as in the fission of a radioactive isotope, 266
 Chalcocopyrite, 1033
 Chalk, 927
 Charcoal, 955
 Charge balance In a balanced chemical equation, the algebraic sum of all charges on one side equals the sum of all charges on the other side, 146, 172
 Charles, Jacques, 461, 908
 Charles's law The volume of a gas sample held at constant pressure is inversely proportional to the absolute temperature, 461–463
 kinetic molecular theory of gases and, 481
 Cheese, sodium monohydrogen phosphate in, 993
 Chelate A coordination complex in which more than one atom of a ligand binds to the metal, 1038
 Chelating ligand A ligand that uses more than one atom to bind to the metal in a coordination complex, 1038–1039
 Chemical bonds. *See* Bond(s); Bonding
 Chemical analysis The determination of the amounts or identities of the components of a mixture, often accomplished by chemically transforming the components into new substances that can be observed or separated by physical means, 90
 by combustion, for empirical formula determination, 123–124
 of mixtures, 125
 by precipitation reactions, 166–167
 quantitative versus qualitative, 162